

Remarks:

Applicant has read and considered the Office Action dated July 21, 2009 and the references cited therein. Claim 5 has been cancelled without prejudice or disclaimer. New claims 10-16 have been added. Claims 1-4 and 6-16 are currently pending. Reconsideration is hereby requested.

In the Action, claims 1-9 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Sekine. With regard to claim 1, the Action contends that Sekine teaches a device comprising a patch antenna processing a signal and coupling means for connecting the antenna to an electronic component, wherein the patch antenna is arranged on a first side of the antenna plate wherein the electronic component can be mounted on a second side of the antenna plate and wherein the coupling means comprise a metal passage through the antenna plate which transposes to a bond pad against the antenna plate on the second side. The Action also contends that Sekine shows that the metal bond wire is between the electronic component and the bond pad.

The Action states that Sekine does not explicitly teach the length of the passage as seen perpendicularly of the antenna plate being smaller than a quarter-wavelength of a signal to be processed by the antenna. The Action also states that with regard to claim 2, Sekine does not teach the length of the bond wire being smaller than a quarter-wavelength of the signal to be processed by the antenna. The Action contends that it would have been obvious to one of ordinary skill in the art to make the length of the via significantly smaller than a quarter-wavelength of the signal to be processed so that the via does not contribute to the operating frequency of the antenna device. The Action states that it is well known that the length of a radiating conductor determines the operating frequency of the radiating conductor and that it is preferable to have the length of the connections between the conductor and the components be negligible in comparison to the size of the radiating conductor to minimize signal loss.

asserts that upon careful review, it can be seen that claim 1 patentably distinguishes over Sekine and any other prior art.

Moreover, the Office Action rejects claim 3 and refers to element 5 as a cover plate. Applicant does not find that element 5 in Sekine is a cover plate and that it may be possible that a different element was meant to be cited. However, it can be seen that when properly construed and when Sekine is more closely read, claim 1 patentably distinguishes over Sekine. Moreover, claim 3 patentably distinguishes over Sekine for at least the same reasons as well as others.

With regard to claim 8, the Office Action states that Sekine teaches a periphery of the conducting passage substantially corresponds with the width of the power supply line. Applicant respectfully traverses the rejection. It is clear that in Figure 1, the central conductor surface is several magnitudes thinner than the width of the metal patterns 7 of the planar antenna. Applicant therefore asserts that claim 8 is not obvious in view of Sekine when properly construed.

Applicant asserts that claim 1 and the claims depending therefrom patentably distinguish over the prior art. Applicant requests that the rejection under 35 U.S.C. § 103(a) be withdrawn.

New claims 10-16 have been added. Claim 10 provides further clarity and distinguishes over the prior art. Claim 10 now recites an antenna and a printed circuit board (PCB) and recites a via. It is clear that Sekine or other references cited in the International Search Report use a coaxial line and that the PCB and via are neither shown nor suggested by the prior art. Applicant asserts that claim 10 patentably distinguishes over the Sekine reference. Moreover, the claims recite that the process is for a high frequency signal. This further affects the dimensions relating to a quarter wavelength and further distinguishes over the prior art.

Applicant respectfully traverses the rejection. Upon careful review, it can be seen that the Sekine reference has not been characterized correctly. The Office Action indicates that the only difference between the recited invention and Sekine is the length of the passage. However, the device as disclosed in Figures 1 and 5 of Sekine comprise a planar antenna arranged in an antenna substrate 2. The conductor 6 passes through the antenna substrate, but does not transpose into a bond pad against the antenna substrate. Rather, the conductor extends all the way through Sekine's dielectric 14 and is connected with a metal pattern 10 on a different circuit substrate 3. Moreover, the conductor is a central conductor of a coaxial line that is isolated from the ground plane 21 on the bottom side of the antenna substrate 2. The device of the present invention provides a sturdier coupling between a patch antenna and an electronic component that is subject to very little disruption from misadjustments of impedances. In Sekine, the coupling is mainly formed by a first end of a central conductor extending through the antenna substrate 2. A coaxial line extends through the substrate at a second end part of the conductor extending through a circuit substrate 3. The central conductor has to pass through three substrates (designated 2, 1 and 3), which have planes 21 and 31 between the substrates. With such an arrangement, it is generally not possible to make the length of the central conductor smaller than a quarter-wavelength for typical signals processed by antennas in high frequency applications. As the Office Action does not address each and every limitation of claim 1 and the prior art does not render the device of claim 1 obvious, Applicant asserts that claim 1 patentably distinguishes over Sekine and any other prior art.

Applicant notes that the coupling of the present device includes a metal passage (or via) through an antenna plate that transposes directly into a bond pad. This passage is kept extremely short and smaller than a quarter-wavelength so that there is no disruption from mismatch of impedance. This is a fundamentally different system than the device disclosed in Sekine, which does not consider or address the same problems. Sekine only has a coaxial line and uses a signal line through a thick substrate 1 underneath the antenna substrate 2. Applicant

Applicant asserts that claim 10 as well as the claims depending therefrom, patentably distinguish over the prior art. In addition, claim 11 substantially recites the features of claim 3 as well as that the electrically conductive plate forms a ground plane for the antenna. Applicant asserts that the prior art fails to teach or suggest such an arrangement. Applicant asserts that claim 10 and the claims depending therefrom patentably distinguish over the prior art and are in condition for allowance.

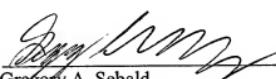
A speedy and favorable action in the form of a Notice of Allowance is hereby solicited. If the Examiner feels that a telephone interview may be helpful in this matter, please contact Applicant's representative at (612) 336-4728.

Please consider this a PETITION FOR EXTENSION OF TIME for a sufficient number of months to enter these papers or any future reply, if appropriate. Please charge any additional fees or credit overpayment to Deposit Account No. 13-2725.



Respectfully submitted,
MERCHANT & GOULD P.C.

Dated: 10/21/09

By: 
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